NIVERSITY OF ILLINOIS BULLETIN
. 40 ISSUED WEEKLY NO. 13

OPINION AND COMMENT

The Role of Assembly Lines in War Production

The Fiscal Problem in Illinois

Changes in Consumer Buying Methods Resulting From Tire and Gas Rationing

The Plight of the Small Investor

The Production Requirements Plan

Why Not Start Your Own Business?

COMPILED BY THE
BUREAU OF ECONOMIC AND BUSINESS RESEARCH

PUBLISHED BY THE UNIVERSITY OF ILLINOIS

NOVEMBER 17, 1942

OPINION AND COMMENT

•

CONTENTS

•

This publication of the Bureau of Economic and Business Research of the University of Illinois rests upon the belief that businessmen of the State will appreciate interpretative comments on current events. Because studied opinions on the significance of current trends are often more thought-provoking in the conduct of business affairs than mere tabulations of data would be, the Bureau supplements its research bulletins by producing *Opinion and Comment* as another type of service to the State.

The opinions expressed in the articles are, of course, the personal views of the respective authors and not necessarily those of the College of Commerce or the University.

Please notify the Bureau of Economic and Business Research of any change of address

•

CATHERINE G. RUGGLES, Editor

FRED M. JONES, Associate Editor H. L. NEWCOMER, Associate Editor

•

Entered as second-class matter at the post office at Urbana, Illinois, under the act of August 24, 1912. Office of Publication, 358 Administration Building, Urbana, Illinois. Acceptance for mailing at the special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 31, 1918.

The Role of Assembly Lines in War Production

Corporal JOHN R. IMMER
M.S., University of Illinois, 1942

Origin and Meaning of Assembly Lines

To the uninformed layman the modern assembly line seems to be an almost magical process by which machines are created out of thin air. To the industrial engineer the assembly line is an orderly, common-sense manner of assembling the parts of a machine in the quickest and most economical way. It is a method of assembling thousands of parts into small subassemblies, and, in turn, assembling these into larger assemblies until all are incorporated into the final product.

The primary purpose of the assembly line is to insure a steady flow of materials through the plant. In modern airplane factories, raw materials and parts enter one end of the plant while the finished fighting planes and bombers pour in a steady stream from the opposite end. This is made possible by the labor of thousands of workers, each performing a given function in the line arranged on a straight-line basis. Straight-line manufacturing lessens the distance traveled by material in process, and reduces backtracking and long distances between operations.

The assembly line is a newcomer on the industrial scene. Its first use was in the disassembly of hogs and cattle in the meat-packing industries. Carcasses carried from one operation to the next on conveyors were dissected into main parts, and these in turn were processed. Continuous-process industries, such as the manufacturing of cement or the milling of flour, are based on processing lines and employ many of the principles now used in assembly lines.

The first use of this method in fabricating industries dates back scarcely thirty years. On May 1, 1913, the first moving assembly line was put into operation by the Ford Motor Company to assemble flywheel magnetos. In November of the same year the moving assembly was extended to include the complete motor assembly. Although there was some comment on the innovation at that time, only a few other manufacturers adopted similar methods of production. For the most part the new process was ignored.

The press of greater production caused by World War I led many factories to incorporate assembly-line methods into their operations. Shell manufacturers, for example, developed the straight-line flow of material to a high degree of efficiency.

The trend toward the use of assembly lines in fabricating industries gathered momentum after the war. Velie Motors Corporation of Moline, Illinois, in 1920 doubled its output from 25 to 50 cars a day by the use of new assembly-line methods. A system of channel iron tracks insured sequence of operations. An inclined conveyor allowed easier moving of subassemblies. Motors were removed along the monorail by hand.

In 1921, in the Studebaker plant, a power-driven conveyor was used in the assembly of automobile frames and chassis. All the parts needed to assemble the complete unit were contained in racks between the upright supports upon which the frame and chassis were assembled. It was a common arrangement in this period to have all the parts necessary for completing the unit accompany the machine from the beginning of the assembly process.

A variation from this method was employed by the Todd Protectograph Company in 1921. This system provided for a group of assembly benches arranged at right angles on both sides of a conveyor. The conveyor started in the storeroom. There all the parts necessary to complete the machine were placed on the conveyor. Each worker performed his operation on a certain part and the completed subassembly was returned to the conveyor, on which it was carried to the man who performed the next operation. The completed machines were removed at the end of the line.

Early Methods of Assembly

Prior to the use of progressive assembly, several methods were used to assemble the different parts required to make up the article manufactured. One method was to dump all the parts together at a certain place on the factory floor. A crew would then proceed to sort out individual parts as they were needed. This was done until the machine was completely assembled. Where there was a relatively large production requirement, the problem of increased volume was solved by adding other assembly groups and giving them certain areas on the factory floor within which they might work. As there was little specialization of labor, this process required a group of comparatively skilled men; in many plants the assemblers formed an aristocratic clique. As early as before the first World War, some of these groups began to oppose efforts to speed up the assembly process.

In the early days of the automobile industry, parts used in assembly were supplied by gangs of men with trucks who ran around the plant leaving parts near each car in the process of assembly. One gang would leave frames, another motors, another the rear axles, and so on. The assembly crews moved from car to car, and one slow or lagging unit could hold up the entire line.

A sewing machine company in 1925 stated that it was common to find workmen wandering around the plant and looking in different bins to find parts for the machines they were assembling. A new system was devised to eliminate this wandering

around by workmen. The backbone of this system was a bin, mounted on wheels, which contained all the parts necessary to assemble fifty machines. There were partitions and racks for the main parts and bins for the smaller parts. The first man on the line would receive the bin, perform a certain task on all of the fifty machines, putting each one back on the rack as he completed his work on that machine. After his operation was completed on all fifty of the machines, he pushed the bin to the next man in line, who performed another group of operations on the same fifty machines, and in turn passed them to the next man in line.

In several of these early methods of assembly may be seen the germ of the assembly-line method. The subassembly of small units and the subdivision of operations was a logical step in this direction. The introduction of the moving assembly line marked the beginning of a new stage of manufacturing and ushered in the industrial economy based on the mass production of complicated machines for public use.

Ways in Which Assembly Lines Speed Up War Production

To a large extent World War II is being fought with planes, tanks, guns, and ships, each of which presents a problem of fabrication. Airplane fuselage and motor parts are machined to within tolerances of 2/10,000 of an inch. (The most skillful surgeon is accurate to within 1/50 of an inch.) Assemblies in some cases must be nearly as accurate. Such accuracy requires air-conditioned rooms for assembly to prevent distortion. Prior to the adoption of assembly-line methods, individual planes were assembled piece by piece and the planes were produced on a custom-built basis.

Perhaps the most dramatic illustration of the effect of assembly-line methods on war production is that of shipbuilding. The first contract of the war for cargo ships called for completion within 144 days. The Oregon Shipbuilding Corporation early in June, 1942, launched a ship which had been completed in 46 days. In August a ship was launched 27 days after the keel was laid. On September 23, President Roosevelt was present at the launching of a vessel which had been just 10 days on the ways.

Such production records were made possible by extensive prefabrication of about 50 per cent of the material "ahead of the ways," the use of welding for nine tenths of the connections, and the use of traveling cranes to lift sections up to 100 tons into place in the hulls. In the production of ships by this method, 15,000 smaller pieces were reduced to 275 large assemblies by welding. These assemblies were in turn progressively built into the vessel on the ways.

In the fabrication of almost every machine produced for war, there have been similar records of doubled or trebled production. A large share of the credit for these records is due to the application of the principles of assembly-line layout. The results of the assembly lines on war production are thus clearly evident. What then have been the ways in which these economies have actually been effected? How have assembly

lines increased production? A brief outline of some ways in which war production has been speeded up by assembly-line principles may be of interest.

1. Continuous flow of production makes it easier to control schedules. Group assemblies may be timed to fit into final assemblies.

2. Handling and moving of materials is reduced. Materials move through the plant in an orderly, prearranged manner.

3. Timing of subassemblies and parts to flow into larger assemblies as needed reduces inventories of parts and materials in process. Stocks have been reduced as much as 50 per cent in some instances.

4. Subdivision of operations makes it possible to employ more workers on a line and to increase the efficiency of individual workers.

5. Less counting, inspection, and clerical work are required where material progresses on the assembly line from one operation to the next. Paper work and production-control expense are materially less than they would be under ordinary shop methods.

6. Less supervisory attention is needed on the assembly line. The increase in supervisors has been considerably less than the increase of total workers in war plants. Supervisory talent has in some instances been spread very thinly.

Contribution of Assembly Lines to the Solving of Labor Shortages

One of the first shortages of the war production program occurred in the need for skilled machinists, especially in the machine-tool industries. Similar shortages also developed in the rapidly expanding airplane plants. The way in which these shortages were overcome has been one of the most important developments of the industrial program. It is the story of the overnight change of salesmen and clerks into machinists and skilled assemblers.

The secret of such a magical transformation lies in the simplification of tasks and the specialization of labor employed in machining processes and on the assembly line. The need for a worker skilled in one small operation rather than in all types of work makes it possible to train a man or woman in a few weeks to perform a task which may formerly have been done by a machinist after years of training. The primary result of giving a mechanic only a few operations to perform is that he can become expert in his task within a short period of time. Greater skill and confidence will enable him to produce more than if a greater number of operations were assigned to him.

The analysis of motions used in operations reveals that the operation itself commonly takes only a small part of the total time required; the greater part of the worker's time is taken up in changing from one operation to another and in becoming adjusted to the new operation. When one worker performs several operations, there is waste motion in his changing from one to the other and back again. If he is given fewer tasks to perform, he can reach his maximum efficiency more quickly.

Specialization of labor on assembly lines permits the use of men less skilled than were formerly needed. Instead of the years of training and apprenticeship formerly required, skilled workmen (on a given operation) may be developed with only a short training period. At a time when skilled labor is so acutely needed this factor becomes very important in the industrial picture.

Importance of Flexibility

Flexibility of assembly lines is an essential feature of modern industrial plants. If new developments are being made constantly, the entire layout may have to be changed overnight. A plant designed for the mass production of a certain plane may have to be used for another entirely different model by the time it is ready to go into actual production.

Experience on the battle lines leads to constant improvement of fighting equipment, and the industrial facilities must be flexible in order to change to these new types with a minimum loss of production effort. The production of tanks affords one instance in which the entire technology of construction was changed by the time many plants were ready to produce. Plants designed for the assembling of tanks by riveting had to be adapted to the entirely different system of fabrication by welding and to the use of large cast steel units. This change was caused by experience with riveted tanks on the Libyan battlefields in North Africa. Many times, when plates were struck by shell fire, the heads of sheared rivets presented as much danger to the tank crews as the shells of the enemy.

Maximum flexibility in assembly lines is obtained in new industrial plants by the use of processing machinery driven by individual motors and by the use of portable tools and equipment. In newer plants electric conduits are laid under the concrete floors during the initial construction. In this case outlets are provided at convenient intervals wherever they might later be needed. In other instances, overhead conduits with special outlet boxes provide a source of power and light at any place on the floor.

Rapid expansion of production facilities necessitates considerable foresight in planning. Structures must be flexible in their arrangements and construction in order to minimize "growing pains." In the study of flexibility of assembly lines in the physical plant, the following factors should be considered.

1. Extension of production lines. Operations are further subdivided, and more workmen are added to the line. The pace of the assembly conveyor is increased and the finished product rolls off the end of the line at a greater speed.

2. Mezzanines and auxiliary departments. The need for many intricate subassemblies in plane production has led several companies to make extensive use of mezzanine floors for this purpose. The Vega Airplane Company has a mezzanine floor with a total area of 197,000 square feet in its fabrication and assembly building.

3. Shape of buildings. The current trend in new plants is to house all the processes under one roof in a rectangular building and make that building a manufacturing unit. A fabrication building of the Vega Airplane Company is 600 by 853 feet. The addition to a plant of the Boeing Airplane Company comprises a million square feet of space. In other industries the shapes of the buildings most commonly used have been rectangular, E, H, I, L, and U, and modifications of these forms.

4. Design for expansion. A plant designed for separate manufacturing units may be expanded without interfering with production in the existing units.

5. Structural features for expansion. Large areas of windows and other nonstructural methods of covering the area provide for ease of expansion. The new building of the Hydraulic Press Manufacturing Company at Mount Gilead, Ohio, is constructed in this way. The sash and asbestos siding are merely bolted to the frame. This method will allow expansion without loss of materials.

Importance of Subassembly as an Aid in Scheduling and Cost Control

The continuous flow of production is an essential feature of modern assembly methods. To attain this ideal flow of materials and parts, so that each unit arrives at the proper place of assembly at the time it is needed, requires complete scheduling of both assembling and machining operations. The total amount of time necessary to perform each operation and assembly, as well as the sequence in which the parts and subassemblies are to be assembled, must be determined. This is accomplished by time and motion studies of these or similar operations. A high degree of accuracy is necessary in setting these times.

A breakdown of the larger units into many smaller but complete units greatly simplifies the problem of scheduling. Schedules are worked out for the larger assemblies which will provide for the completion of the product on a specified date. Schedules are then evolved for the smaller assemblies and in turn for the machining of the individual parts.

In cost control, the breakdown of the product into a group of smaller but complete units makes it easier to allocate manufacturing costs. The principle of building up subassemblies complete in every detail opens up great possibilities in the distribution of prime costs and overhead accounts.

Importance of Live Storage

Live storage is the state in which material-in-process is held during actual processing or in motion. The ideal of live storage is obtained in the continuous-process industries, in which the material flows uninterruptedly through the plant without being held in storage at any point.

Inventories are a source of great concern in practically all industries. In the modern industrial plant the necessity of keeping large stores of materials by each machine or

working center can easily run the inventory of the plant into an enormous sum and result in loss instead of profit. The economies that can be effected by live storage and the consequent reduction of inventories in process are often considerable.

The use of mechanized conveyors on assembly lines permits the formation of the necessary banks of materials for the working centers. The Ford Motor Company in many of its plants has almost eliminated the dead storage of material. Raw material enters one end of the plant and is continually in process or in motion until the finished part leaves the other end. Needed banks of material are provided on the moving conveyors.

In the assembly of front suspension units and rear axle units for the 1941 Buicks, conveyors were utilized as moving storerooms. It is estimated that the elimination of trucks and skid boxes resulted in a saving of fully one third of the floor space. The use of conveyors eliminated the storing of axle castings, moving from storage, and transporting to the point of use by trucks.

What the Small Business Man Can Learn from These Principles

The impact of new methods of production will be felt by all manufacturers and by business in general after the war. The methods whereby old production records have repeatedly been shattered and new peaks of economy reached will not soon be forgotten. Competition for the consumer's dollar will result in greater consumer values than we have yet had in the normal competitive market. Competitive forces will compel all producers to take cognizance of these principles of the assembly line and to incorporate them into production methods.

The principles used in the assembly lines of the large manufacturing industries may be applied with equal advantage to the problems of the smaller business man. In retail stores the filling of orders on mechanized conveyors may reduce costs. The smallest entrepreneur will do well to keep in mind the advantages of flexibility in his store or shop. Economies effected by specialization of labor can increase profits for smaller businesses as well as for large concerns. Subassembly, even in small plants, may materially simplify the problem of cost accounting.

The basic principle of the assembly line is the orderly progressive assembly (first in subassembly and then in final assembly) of a product in a continuous process, and it is generally embodied in a mechanized conveyor regulated to the desired rate of production and arranged on the straight-line principle. Assembly-line principles are universal in nature and apply to other lines of business as well as to large industries. In the further application of these principles lie the possibilities of unparalleled production in the postwar world.

The Fiscal Problem in Illinois

M. H. Hunter

Department of Economics, University of Illinois

The activities of governmental units should be financed by methods as carefully designed and administered as those employed by efficient private enterprise. In times of emergency, individuals do well to review their financial practices; thus they frequently find ways of meeting the emergency and also may discover any defects in their previous practices. There can be no doubt that all governmental units, Federal, state, and local, are now faced with a financial emergency, and it therefore seems apropos to review the fiscal situation within this State.

One of the most pressing problems of the moment is to decide upon a policy of State expenditure during the war emergency. Since the responsibility for financing the war rests largely with the Federal government, some argue that there is little need for change in the activities of the State. This position ignores the basic fact that the social income of the people of Illinois, of New York, of Ohio, and of the other states must finance the activities of the Federal government as well as those of the states and local units. Greatly increased Federal taxes upon the income of the individual have created an emergency in his finances just as surely as would a major operation, and in neither case can he be expected to continue with "business as usual." State authorities should recognize the emergency which confronts the citizens and, through a retrenchment in State expenditures, help them to meet it with the least possible difficulty.

Such a policy at once raises the question as to just what public expenditures are defensible. In an emergency, expenditures, both private and public, should be scrutinized more closely than under normal conditions. Under any conditions, however, the citizens have a choice both as to the functions to be performed by their government and as to the amounts spent therefor. If the oft-heard slogan, "Take the government out of business," were put into effect, the only functions left would be regulatory and judicial in nature. Few would actually desire so drastic a curtailment, yet a decision must be reached as to what functions the State shall perform for its citizens, and at what cost.

Obviously, in public affairs just as in private, all functions should be performed as effectively and economically as possible. The emergency may prove to be of great service to us if it forces us to reexamine our fiscal system. If government were regarded as one of the departments of a business, more attention would be given to its operating efficiency. For any department which absorbed as much of the income of a business as government does would be carefully studied with

a view to attaining the most efficient and economical operation possible.

Private business is organized into departments in order to secure greater economy and efficiency. The organization of governmental units, on the contrary, serves no such purpose. The State of Illinois includes fifteen or sixteen thousand separate political jurisdictions—a number which no other state even approximates. There is a great disparity in area, wealth, and population among units of the same type. About one sixth of the counties do not recognize the township as a governing unit. A study of the political units of the State, in order to determine whether reorganization, combination, and elimination might not result in greater economy and efficiency, seems amply warranted.

There should also be careful investigation of the number and capabilities of State employees. Those who hold public office, whether elective or appointive, are no less our employees than managers, laborers, clerks, and accountants in our private businesses. In this emergency as many of these public employees as possible should be released, either by elimination of their service or by the assumption of their work by others, to more direct war activities. A "padded" payroll can never be justified, but it is unpatriotic in such times as these.

Furthermore, public employees should be chosen with as much care as is exercised in selecting employees in private business. In the latter case, the qualifications of the applicant are examined in relation to the position for which he is being considered. Do we exercise the same care with regard to candidates for public positions, or do we accept proper "political clearance papers" as the basic recommendation? In our private business, moreover, we give recognition to competence through permanence of tenure and increased remuneration. Do we do as much for our public employees?

Devices known as "expenditure controls" have been developed over the years, mainly by private business organizations, the most important of which are budgeting, accounting, auditing, and centralized purchasing. Emergencies in the affairs of business concerns have sometimes been blessings in disguise in that they have forced the adoption of these devices, which are fundamental to the successful conduct of any business. If the present emergency compels us to realize that the political units of Illinois, according to an eminent authority on public administration, have made less use of these controls than any other state, we may profit by the experience. The adoption of these devices would tend to prevent waste and fraud in the administration of public funds.

Even though we were able to justify the expenditures of every political unit in the State, and had adopted every device to attain economy and efficiency in administration, we might still have, as Professor T. S. Adams has characterized it, the worst tax system of any state in the Union. In other words, in

order to have a defensible fiscal system, attention must be given to the methods by which revenue is secured as well as to its expenditure and administration. It should be noted that, over the years, the total tax burden in Illinois for State and local purposes has not been heavy. In fact, measured by the percentage of social income taken by taxes, the burden has been lower in this State than in any other. The real problem has to do with the distribution of the burden rather than with the total burden.

Those charged with the responsibility of raising revenue must, of course, be governed by the provisions of the constitution and the Court interpretations of them. Because of the many changes in our economy, it may be questioned whether the framers of the constitution would agree with the interpretation of their intent as handed down in many Court decisions. On the contrary, may there not be some truth in Bentham's statement that judges continue to be methodically ignorant of what everyone else knows to be true? At any rate, tax reform in Illinois is definitely restricted by certain Court interpretations of constitutional provisions. To make the restriction even more stringent, amendment of the constitution is almost impossible. The Court's decision that, in order to be adopted, an amendment must receive a majority of the votes cast at the election rather than a majority of the votes cast on the amendment is sufficient guarantee that a proposed amendment will be defeated, since every failure to vote is, in effect, a negative vote. Either the constitution or the Court interpretations of it must be modernized before a defensible revenue system can be attained in Illinois.

For many years the general property tax was the chief source of revenue for both the State and the local units. Recently, however, the State has relied entirely upon other sources. The administration of the property tax has been extremely unsatisfactory. The courts have insisted upon the application of a uniform rate in spite of a general lack of uniformity in burden. Although property of any value whatever, except for a few specified types, is subject to assessment, assessors do not usually make assessments of less than $200 or $300. Although bonds, stocks, mortgages, and similar instruments are property for purposes of sale, the requirement that the assessor list them for purposes of taxation can result only in double taxation or laxity of administration. Such instruments are merely pieces of paper; their value is derived from the value of the property they represent. They show ownership or type of agreement, and a change in their amount does not change the amount of wealth or tax-paying capacity involved. If it did, the Federal government would have been adding greatly to the national wealth in recent years. To levy a tax, then, upon the value of a farm, a factory, or a mercantile establishment and, in addition, a tax upon the evidences of claims against them is in reality to levy two taxes upon one productive capacity. The injustice arising from

this practice, rather than any inherent dishonesty on the part of the persons concerned, may account for the fact that such a small percentage of these intangibles is found on the assessment roll.

The uniform rate provision, together with a decision of the Illinois Supreme Court, has effectively prevented the adoption of a personal income tax. The Court has held that income is property.[1] According to this test of constitutionality, therefore, no exemptions could be allowed and progressive rates could not be used in a personal income tax. Both satisfactory administration and justice are thus thwarted. It seems that assessors should take some cognizance of income in their assessment rolls—at least that part of income which could be assigned to the first day of April. Such consistency, however, would not be regarded as a jewel.

Corporations are a base for taxation in all states. The method varies from state to state, but no other state has so poor a method as that used in Illinois. In addition to taxes on real estate and a franchise tax, domestic corporations are required to pay a tax on the value of capital stock. Out-of-State corporations are not subject to this tax. This levy is faulty in two respects. The first is the method of assessing capital stock. The value of the capital stock of corporations engaged in manufacturing and merchandising, mining and selling coal, printing and publishing newspapers, and a few others is determined by the local assessor in the taxing district where the principal office is located. The value of the capital stock of all other corporations, including railroads, public utilities, hotels, etc., is determined by the State Tax Commission, and is certified to the districts in which their principal offices are located. In spite of supervision by the Tax Commission, great inequalities in assessment continue to be the rule. In view of the complexities of the modern corporation and the fact that most local assessors are part-time officials and lack adequate training, satisfactory results cannot be expected under this arrangement.

In the second place, the provision for taxation of capital stock at the location of the principal office has naturally had very poor results. A single criterion determines this location—the designation in the charter of the company.[2] In many cases, the possibility of low taxes seems to have been a determining factor in the location of the principal office. To tax the capital stock in a district where none, or only a small part, of the assets or business is located seems hardly fair to the

[1]This position was taken in *Bachrach* v. *Nelson,* 349 Illinois 579. State courts, however, have not been consistent in this view, since in many decisions income is held not to be property.

[2]Only recently the Illinois Supreme Court reaffirmed this position in the language that "under the Business Corporation Act a corporation may locate the principal office at any place it may desire regardless of where its business or any part of it is done, and the place so named in the article of incorporation is the proper situs for assessing the capital stock." *The Illinois Water Service Company* v. *Champaign County,* 367 Illinois 641 (1937).

districts in which the corporation is active.

Attempts have been made to substitute a tax upon the net earnings of domestic corporations for the present inequitable levy. Opposition, however, has always been sufficiently strong to block the change. The objection that such a tax would be unconstitutional has little merit since the corporation is a creature of the state, and as such subject to any condition imposed by the state pursuant to the grant or continuance of a charter. The uniformity of the burden of such a tax should appeal to corporations, and local objections might be appeased by allocation of part of the receipts to local jurisdictions.

The strain upon existing sources of revenue since the economic collapse in 1929 has led to the adoption of a sales tax by many states. In Illinois this tax is called "a tax upon the privilege of engaging in the occupation of selling tangible personal property at retail." It seems rather inconsistent to exact a tax from a person for the privilege of engaging in business and then require him to collect this tax from his customers. The case for the sales tax is that it produces revenue; the case against it is that the persons who pay the tax are those least able to do so. The necessity for resorting to a sales tax is evidence that the revenue system is not defensible. A sales tax should be used only as an emergency measure to supplement a tax system which is both equitable and efficient.

To attain a modern and defensible tax system in Illinois will not be easy; yet the task offers a challenge to those who are not readily discouraged. Before much progress can be made, we must secure either a more liberal revenue section in the constitution or a more liberal interpretation of the present section. The people of a democracy have the power, through their elected representatives, to modify their tax system in conformity with changing economic conditions.

In the future, property will continue to be taxed, but no attempt should be made to tax intangibles. The receipts from the property tax should be left, as at present, with the local governmental units. The proper size of assessment districts should receive careful attention; the machinery for tax collection and devices for preventing and handling tax delinquency should be studied; and the assessors selected should be qualified for the satisfactory performance of their duties.

Whatever the base upon which a tax is levied, it can be paid only from income. Income, therefore, should be given a place of much greater importance as a base in the taxation of individuals and of business. Then those who are able to pay taxes will be doing so. When the present glaring defects have been corrected, Illinois will have not only a low tax burden, but also one which is properly distributed.

Changes in Consumer Buying Methods Resulting From Tire and Gas Rationing

P. D. Converse

Department of Business Organization and Operation
University of Illinois

Consumers in central Illinois who have recently been interviewed report that they are buying fewer goods out of town, that their total volume of purchases has been reduced, and that they are buying larger quantities of the articles they do purchase. In the small towns surveyed, the principal changes which have already been made are a decrease in out-of-town purchases and a reduction in volume of purchases. In a medium-sized city included in the survey, the chief effects so far noted are fewer trips to downtown stores and buying in larger quantities.

The consumers in the smaller towns expect to make further reductions in the volume of their purchases and to increase their buying at home-town stores. The principal changes anticipated by families in the larger city are a reduction in purchases and larger unit purchases.

These are among the findings of a study now being conducted for the Bureau of Economic and Business Research. The results of the survey will be published in greater detail in a forthcoming special bulletin.

Changes in the Smaller Towns

Less than half of the families in the smaller towns say that they have so far made changes in their buying, but some who report "no changes" were already buying all their goods at home. About half of those who do report changes say that they are making fewer purchases out of town. The next largest number report making fewer out-of-town trips, but buying more on each trip. About 10 per cent of the families have reduced the volume of their purchases. Other reported changes include: more travel by public carrier; more persons riding in one car (families "doubling up"); buying in larger quantities; walking to stores, instead of riding. Three per cent report more mail-order buying.

Four fifths of the families in the smaller towns expect to make changes in their buying habits in the next six months. Of the other one fifth, some explain that they have already adapted their buying to changed conditions. The fact that one third expect to make fewer purchases out of town points to increased business for home-town

merchants, but many consumers doubt whether the local stores will carry enough goods to meet their needs. One fourth of the families expect to do less buying. Reasons given for reducing purchases include: saving to buy War Bonds; rationing of commodities; smaller assortments in the stores; higher prices; absence of men in the armed forces; lower incomes; making own goods; and, in a few cases, using up stocks of goods on hand. Some families report raising more of their food and making more of their clothing. Reductions in purchases are expected primarily in rationed goods, clothing, and "luxuries." Six per cent expect to do more buying by mail. Other anticipated changes include: fewer out-of-town trips with larger purchases on each trip; increased travel by public carrier; buying in larger quantities (larger unit purchases); and, in a few cases, moving to larger towns.

Changes in the Larger City

Consumers in the larger city have made and expect to make fewer changes in their buying methods than those in the smaller towns. The principal changes made to date are: fewer trips to downtown stores; buying in larger quantities; using the busses; doing more walking. About 8 per cent have decreased their purchases; another 8 per cent do less out-of-town buying, and 6 per cent are doing more buying at neighborhood stores.

Less than half the families expect to make further changes in their buying. The change most commonly anticipated is a reduction in volume of purchases (one sixth of the families). One tenth of the families expect to buy goods in larger quantities. Other changes expected include: fewer trips to downtown stores; more riding on the bus or walking to visit stores; making fewer purchases out of town; and doing more buying at neighborhood stores.

The Plight of the Small Investor

Donald L. Kemmerer
Department of Economics, University of Illinois
and
Burton C. Hurd, '25
Investment Adviser

Ben Hard is an investment adviser in a central Illinois city of about 40,000 persons. One sunny morning a few weeks ago he and his friend Doug Chamberlain went out for a game of golf. Doug teaches American economic history at the state university.

Said Ben, as they drove off: "A man came into my office yesterday with this story. 'I have a little money to invest—had a mortgage paid off—what'll I do with it? As you know, most of my high grade four and five per cent bonds have been called long ago. I put that money into government bonds and I'm buying some monthly too. Frankly, the income from my accumulated savings has been slowly but surely shrinking and my taxes will be higher next year. Labor seems to get anything it wants. The men can even walk out on a war job. The farmer gets his subsidy. I seem to be the forgotten man. It looks to me as if the thrifty so-called middle class is being slowly liquidated.' Do you think he was right, Doug?"

"There is probably quite a lot in his complaint, Ben. You have daily contact with such persons and know many of their troubles. But what did your customer mean by calling himself one of the middle income group? He is far above that level, I should say."

"I imagine he makes about $5000 a year and has savings amounting to approximately $20,000."

"Anyone with that income is in an upper income group; in fact, until recently anyone was who paid income taxes. In 1938 about three million persons paid income taxes and there were ten times as many families as that in the country. Your customer belongs in the top five per cent income group."

"Yes, Doug, I know he is above average in that regard, but my point is that his group has provided a very considerable portion of the capital with which this country has been built. I read an article in *Barron's* recently by Rufus Tucker, economist for General Motors. He said that, according to a survey he had recently made, probably three fifths of all stockholders are people whose incomes are below $2500 a year, and they receive a seventh of all income from dividends. There are three million such persons. Still another million and a quarter with incomes between $2500 and $5000 receive a second seventh of all in-

come from dividends. My customer would fall in this class."

"Probably the greater part of the country's savings has been made by the very rich, Ben, and by corporations that have plowed back some of their profits into plant expansion. But the small investor, as you say, is also an important contributor. Certainly, people who hold enough stock to receive nearly two sevenths of the country's dividend income deserve consideration and attention."

"That's my point, Doug, and of course I am especially interested in their problems. Since 1926, which seems to be regarded as a normal year in many respects, the small investor has taken one beating after another. Most of them are common enough knowledge, but the sum of them is impressive, if not downright alarming, to the small man for whom saving is an effort. To begin with, there was the Wall Street panic of 1929 and the great depression that followed. The fates appeared to want to soften up the investor with good times and rosy promises at first. This made the hard times that followed seem even worse than they were, if possible."

"If I remember rightly, Standard and Poor's Corporation statistics, which cover over 400 stock issues, were until recently based on 1926. The index number for stock values rose from 100 in that year to 190 in 1929, and then fell to 49 in 1932."

"I still shudder at the thought of some of those days in the first years of the depression, Doug. To me it is not just a fluctuating index number of several hundred stock issues. It is a human interest story, a story of misguided hopes. A few quotations stand out, such as Goldman Sachs Trading Corporation falling from 121½ to 1¾ between 1929 and 1931. Some people were speculating, of course, when they had no business to do so, but others were simply trying to invest their savings wisely. Even some of the more highly regarded stocks and bonds suffered. Remember, American Telephone and Telegraph fell from 310¼ in 1929 to 70¼ in 1932, and Bethlehem Steel 5's of 1942, an Aa bond, dropped from 106 in 1930 to 69 in the depths of 1932."

"After 1932 things picked up though, Ben. Bonds staged a nice recovery and by 1937 the Standard and Poor's stock index was back to 112."

"Yes, I know, but it didn't stay there long and hasn't been back since. It reached a recent low of 60 in May of this year. Of course the war is probably the chief cause. The fears and dislocations associated with it furnish no environment for investor confidence."

"One would think that the recovery might have been more pronounced during the decade preceding the war in view of the fact that interest rates dropped considerably. Theoretically, a security earning $5 a year sells for $100 when the current rate of interest is 5 per cent. If the current interest rate drops to 2½ per cent and the security still earns $5, its value should rise to about $200.

"But, Doug, interest rates, important as they are, are not the only factor influencing the investment market. It would be extraordinary

to find in practice such a neat classroom illustration as the one you just gave."

"Granted, Ben. That is why economists use that qualifying phrase, 'other things being equal.' I was merely trying to emphasize the importance of interest rates, which are a main force behind market value."

"I see what you mean. Maybe things were even worse than we thought, Doug. Anyway, the investor has not been happy about the value of his principal and he has been almost more disappointed by the decline in his income from high-grade interest-bearing securities. Interest rates have fallen sharply. If I remember correctly, Moody's Aaa bonds declined from 4.7 per cent in 1929 to 2.8 per cent in 1940; commercial loan rates fell from 5.8 per cent to 2.6 per cent in the same period; and U.S. Treasury bonds fell from a 3.6 per cent yield in 1929 to 2 per cent last June. How do you economists explain such a marked decline in interest rates over such a long period?"

"I have no single simple explanation of it, Ben. There were a number of causes, and it would be difficult to determine their relative importance. Bank rates normally decline in a depression period because less business is being done, bank reserves are high, and banks have plenty of funds to lend if the security is good. But in this case the worst interest-rate declines began after 1933, and are to be attributed in large part to New Deal monetary experiments, to recurrent deficits, and possibly to Treasury policy."

"Let's have the story in a little more detail, Doug."

"All right. I'll start with the monetary experiments and their effect on interest rates as I see it. The general price level, you may remember, fell about one third in the four-year period of 1929 to 1932, but of course prices did not decline evenly. They never do. Farm prices dropped over one half, which meant that farmers' incomes would buy less store goods than before. And debtors had to repay creditors in more valuable dollars than they had borrowed—in dollars that were considerably harder to earn. These people felt there was something radically wrong and supported Franklin Roosevelt's candidacy because he promised to do something about it. He tried. Since his advisers told him that 1926 was a normal pre-depression year, it was decided to try to push prices back to the 1926 level and then keep them there—that is, keep the purchasing power of the dollar stable. That was as noble a goal as the Golden Rule and about as easy to achieve. In a fireside chat to the nation on October 22, 1933, the President attempted to explain his gold-purchase plan for raising prices and remarked, 'I am not satisfied with the amount or extent of the rise [in farm prices] . . . . If we cannot do it this way, we will do it another. Do it we will.' Well, three months later the size of the theoretical gold dollar was cut 41 per cent. Within less than a year the price the Treasury would pay for gold had been raised from $20.67 to $35 an ounce. It was a grand opportunity

for gold miners all over the world, and many an abandoned mine was re-opened. The plan didn't raise prices then as the President hoped but it did cause the Treasury to acquire enormous new supplies of gold."

"Yes, Doug, but what has all this to do with low interest rates and the plight of the small investor?"

"Just a minute. I am coming to that. As a result of our devaluation of the dollar and of the gold-buying policy, our gold reserves increased from $4 billions in 1933 to $23 billions now, and we have acquired over 70 per cent of the world's supply of monetary gold. Money was more plentiful, bank reserves were high, banks continued to be anxious to lend, and they showed it by keeping interest rates low. But many business men did not trust the New Dealers, and so the low rates often went begging anyway. All this tended to lower other interest rates and lessen incomes from investments."

"Yes, I see your point. You also said that the recurrent deficits kept interest rates low."

"I think that was also important. After 1932 the Federal public debt increased sharply. People were making less money than in the 1920's and the government was spending twice as much, but the Administration did not dare lay all the burden on the shoulders of the taxpayers. The deficit averaged $3 billions annually from 1933 to 1939. Someone had to provide the money, and it was the banks who put up a good portion of it. They had plenty to lend, and much of the time business was slack. Broadly speaking, banks bought government bonds and credited the government with the proper amount on their ledgers. The banks created demand deposits and the Treasury could, of course, write checks against these deposits. Demand deposits grew from $12 billions on June 30, 1933, to $25.6 billions on December 31, 1939. Once spent by the Treasury, these funds came back to the banks in other accounts. The banks now had more money seeking a profitable outlet. Interest rates continued to fall, accordingly."

"Wasn't your third point Treasury policy?"

"Yes, that ties right in with the financing of deficits. As the public debt mounted year after year, it became increasingly important to keep down the carrying charges of this debt. The Treasury Department was glad to see interest rates low. In fact, if interest rates had stiffened, as they seemed to be doing for a time in 1937, the government might have been very much on the spot. Rising interest rates would have tended to lower the market value of government bonds. This would have damaged the government's credit and have been a serious blow politically as well as financially. Furthermore, it might have done irreparable damage to banks, about 40 per cent of whose earning assets was in government bonds. I have no proof that the Treasury tried to keep interest rates low for this reason, but it would indeed be surprising if the thought did not occur to it. The significant fact is that the rates did remain low and

as a result our investor, whom we have almost forgotten in my wanderings, did suffer a declining income."

"Not only did his income drop because of falling interest rates, Doug, but he was faced with an ever-declining number of choices when he wished to invest."

"You mean, Ben, that business men were fearful of the future while Roosevelt was in power and business expansion did not go forward at what might have been the expected rate. And red tape, responsibility, and expense connected with public offerings under the Securities Act may also have had something to do with slowing down new public offerings. I believe new corporate offerings in 1921-30 averaged $330 millions annually and in the next decade they averaged only $60 millions. That is quite a drop."

"Yes, business sentiment was not right. New enterprises were not encouraged. About that time the New Deal economists were thinking in terms of the theory of scarcity and talking of economic maturity. However, refunding operations, because of low interest rates, were larger in the 1930's. But I had something else in mind, Doug, and that is the increasing resort to private placement of security issues."

"I have heard of that. How does it work?"

"You see, it is still possible under the Securities Act for a corporation wishing to refund to go directly to some insurance company with its offerings, and in many cases a single company or small group could absorb the entire issue. So long as the securities are not offered to the general investing public, no costly S.E.C. prospectus or procedure is necessary. In that way much time and expense is saved."

"The corporation simply by-passes our small investor, you mean?"

"Exactly. In many cases he never has a chance, if he should want to do so, of replacing his called investment with the same company. Many mortgages are likewise refinanced by insurance companies seeking a profitable outlet for their idle funds. They can offer cheaper rates and therefore get the business. Mr. Small Investor loses some of his investment opportunities by that route, too."

"How large a proportion of all issues is disposed of by private placement?"

"I saw some astounding figures on that the other day. The whole matter was investigated last May in connection with a proposed revision of the Securities Act. During the years 1938, 1939 and 1940, about 31 per cent of all issues were privately placed. In 1940 one huge corporate issue of $140,000,000, American Telephone and Telegraph 2¾s of 1970, was privately placed. There were only 40 per cent as many corporate issues in the 1930's as in the 1920's and the small investor did not have any access to a good part of what was offered."

"So far, Ben, we have overlooked entirely the reduction in the investor's income that results from taxation. Heavy taxes are necessary now if we are to win this war. In fact, taxes will probably continue to rise until the war is won, but that does not alter the fact that

the loss in income is discouraging to the investor—especially to the small investor—and may well lessen savings."

"Corporation taxes have really been climbing in recent years, Doug. In my business I have occasion to follow the rates fairly closely. Back in 1929 the corporation income tax was 11 per cent on net income above $25,000; in 1936 it was 13 to 15 per cent; in 1939 it rose to 18 per cent, and in 1940 to 24 per cent. Meanwhile, a surtax of 16 per cent and an excess profits tax of 90 per cent have been added.

"Not only that, Ben, but when the income is declared in dividends and paid out to the investor he must count the dividends as part of his income and pay taxes again. This is double taxation. Before 1936, dividends were exempt from that second taxation. For the first few years thereafter it did not hurt the small investor much, as his income taxes were rather meager anyway, but it does now. I see by the newspapers that a married couple without dependents and with an income of $4000 will pay an income tax of $647 next year. Incidentally that would absorb about all the return from the savings of your investor who had accumulated $20,000. Just when he needs that extra income he must give it up."

"You mean the government needs it more to defend the nation. He is merely being obliged to buy defense of our way of life with it, isn't he?"

"That is exactly it, Ben, but I am not sure he always sees it so clearly."

"But speaking of taxes, I never liked the undistributed profits tax imposed on corporations about six years ago. I have always regarded it as a short-sighted but popular political move to secure additional revenue. Taxing undistributed corporate savings tends to make corporations distribute most of their earnings in dividends. Offhand you might say that it benefits the small investor by enlarging his immediate income, but in the long run I am of the opinion that the practice is harmful."

"How do you reach that conclusion, Ben?"

"Well, for one thing, the small investor's income from his corporate holdings is apt to be either a feast or a famine depending on the phase of the business cycle. It is difficult for a company to maintain an even flow of dividends through the bad years if there is little surplus."

"Is that your only objection?"

"No, my other criticism is that the lack of a generous surplus account tends to make it difficult for a company to go ahead with a project at the opportune moment. This situation may well lessen the company's earnings and of course reduce the profits of the stockholder. You know the classic story of Henry Ford's company, which began with a capital of $100,000 in 1903, plowed back its profits into plant expansion, and by the 1920's was a billion dollar concern. Many of our famous companies have been built up in that way, and if the stock was widely held the small investor has gained accordingly."

"On the other hand, Ben, the supporters of the undistributed profits tax law argue that a company can borrow in the open market, of which its stockholders are a part, instead of drawing on company savings. In this way foolish schemes are weeded out that cannot stand the scrutiny of the Securities and Exchange Commission."

"No doubt there is some truth in that, Doug, but I believe that a more serious result is to lessen company savings and thereby hurt the small investor."

"I think there is a third angle to the undistributed profits tax, Ben. A small group of economists who advised the New Deal believed that the great depression was caused by oversaving. The undistributed profits tax was one result of that belief. But in my opinion, and I think in the opinion of most economists, to discourage savings is to contradict the economic principles by which our nation has been built. The suggestion is that perhaps the investor is regarded as somewhat superfluous regardless of corporate or individual size."

"The investor may eliminate himself, Doug, if inflation develops. Right now we have controls in operation, but I wonder how long they will last."

"Inflation is still another beating he may have to take, Ben. In fact, we have had some already. According to the September *Monthly Labor Review,* put out by the U. S. Department of Labor, 'By mid-July, families of wage earners and low salaried workers had to spend $1.19 to buy the same things for which they spent $1.00 before the outbreak of the war in August, 1939.' To be honest with you, I expect the controls to last about as long as the war does and not much longer. Patriotism should be a fairly powerful driving force. But after that I wonder if the ceilings will do any better than did the N.R.A. regulations in the 1930's or prohibition in the 1920's. In World War I there was no acute inflation so long as the war lasted. Germany's price level had risen about as much as ours at the time of the Armistice. It was after the war that the greatest damage was done; the astronomical rises in Germany came almost five years afterward."

"It is common knowledge that if inflation does come the holders of bonds or of any form of debt will lose badly. Do you think that there is any hedge against inflation? Will the holders of equities, such as shares of stock, be safe?"

"I doubt whether there is any good hedge against a severe inflation, if we should have one. Millions in Europe experienced inflation less than a generation ago and no one emerged with a satisfactory system, at least for the small investor. The holders of stocks should be in a better position than the bondholders, although to date they have not fared any better, but a severe inflation produces serious economic maladjustments and everyone loses."

"You paint a rather bleak picture, Doug. It seems that the small investor may eventually conclude that what he spends he saves and what he saves he loses."

"That is what many persons in the past who have seen and felt inflation have concluded. That is why periods of inflation are often accompanied by extravagance and high living."

"Do you think that the small investor will disappear from the American scene entirely?"

"He certainly has to be a hardy soul, Ben, to stand the great depression, the falling interest rates, the reduction in investment opportunities, the rising taxes, and the threat if not the actual coming of inflation. I imagine he may be discouraged for a few years, and as a result any rise in the standard of living of the nation will be retarded because savings are needed to replace worn-out equipment and develop new ideas. You know, Ben, nowadays our economy is actually a political economy, and political thinking does change when subjected to pressure. For the last decade or so, more and more emphasis has been put upon economic control and centralized planning. That sort of thing seems to be necessary, particularly during a major war, but I look for a reaction when peace returns. I feel that the things that made America great—courage, faith in the future, and the system of free enterprise—will be given a freer rein once more. One result will be that people will again find it worth while to put something aside for a rainy day.

"I'm glad to hear you say that, Doug. A moment ago I was all ready to bury Mr. Small Investor in the sand trap beside the 18th green here."

"No doubt it is our lot, Ben, to live through a period in American economic history when the investor has been badly mauled. But as a historian I cannot help taking a longer view of the matter. A few hundred years hence this period may only be a footnote in the history of an era, like an occasional bad hole in your good game of golf."

The Production Requirements Plan*

G. A. Steiner
School of Business, Indiana University

The most important fact about the current stage of the war program is that the supply of basic materials is not large enough to satisfy all essential material requirements. It is now necessary to review critically and carefully even the most essential productive requirements and to make intelligent decisions regarding their urgency of manufacture. We must determine what shall be produced first and in what quantity, and direct the flow of raw materials into predetermined industrial channels accordingly. This is the most critical industrial problem which faces the United States today. The manner in which it is solved will go a long way toward determining the outcome of the war.

A brief summary of the background of materials control will aid in understanding the development of the present control program and the operation of the Production Requirements Plan. The blanket preference-rating system, typified by P-orders, represented the beginning of control over the use of production facilities. This system had as its fundamental objective the guidance of American industry into those channels in which its efforts would be most useful to the war program. So long as war work was a minor part of our economic activity, and so long as the supply of raw materials was large enough to satisfy all demands upon it, the preference-rating system was fairly satisfactory. But as war production demanded larger and larger quantities of raw materials, greater obstacles were encountered.

Obviously, the flow of critical materials into nonessential manufacturing could not be allowed to impede the expansion of war-goods production. Efforts were therefore

*Under this plan:

PD Forms numbered above PD-5 are application and report forms provided for in specific orders, rules, and regulations. In general, they are (1) applications for materials, supplies, and equipment under mandatory control; (2) reports on the use of preference ratings granted pursuant to a specific order; (3) reports of inventory and/or use of specified material, supplies, and equipment; and (4) complaints concerning the operation of a specific order as it affects an individual enterprise.

M Orders provide mandatory priority control in vital material areas when shortages exist so that available supplies may be conserved and allocated wisely for both war and essential civilian purposes.

E Orders provide control over the distribution of finished articles and are similar to the M Orders.

L Orders limit or prohibit the use of specified materials in certain products or for certain purposes, or limit or restrict the output of specified end products.

P Orders provide special preference-rating treatment for materials entering into the production of specified products or projects, or give preference-rating status to materials, supplies, and equipment when used for specified purposes.

S Orders are the stoppage orders on the preference-rating privilege addressed to a specific producer found to have abused the privileges extended by preference ratings.

made to limit the production of goods which were not considered necessary to fight the war or to maintain the civilian economy. L-orders were issued to curtail the manufacture of nonessential civilian goods which consumed critical materials. M-orders were issued to control and direct the flow of basic raw materials into those channels considered necessary to build our military establishment and to maintain essential civilian services. In addition, efforts were made to increase, by every possible means, the supply of vital raw materials.

As production of armament increased at a rapid rate, it became clear that available raw materials could not meet even the most essential production requirements. The volume of raw materials needed to fulfill war contracts with the highest preference ratings approached, and in some cases exceeded, the supply of raw materials available to fill the contracts. The war program had reached a stage in which the War Production Board could not assign ratings or authorize quantities of materials to individual products without reference to the requirements of the remaining essential civilian and military products. To make this policy effective, material demand in all areas had to be measured in identical terms. Furthermore, the amount of critical material rated for any single industry had to be so limited that the total material rated for all industries would not exceed the supply.

In terms of equating quantity with demand or balancing requirements with supply, efficient control over the distribution of scarce materials involves: (1) a knowledge of the over-all requirements for and the available supply of scarce materials; (2) a knowledge of the urgency and essentiality of specific competing demands for specific quantities of scarce materials; (3) a major policy decision, on the basis of these facts, concerning the specific volume of materials which will be allowed to flow into specified production channels; and (4) an administrative organization able to allot materials to specific producers in terms of broad policy decisions and to maintain close control over the material flow both as to volume and as to direction. These are the rudiments of an efficient materials-control system. In varying degrees, the Production Requirements Plan meets each of these tests. It provides a solid framework for efficient over-all control.

Roots of the Production Requirements Plan

The Production Requirements Plan traces its primary roots to the Defense Supplies Rating Plan introduced in May, 1941, and the Health Supplies Rating Plan begun in August, 1941. The former required producers to furnish a statement of the quantities of materials used in defense production. The latter asked producers to state the quantities of materials needed to produce surgical instruments, medicinals, and similar products.

These plans were adapted to other fields and extended to new production facilities so that by November,

1941, they provided priority assistance to approximately 5,000 manufacturers. At that time the Production Requirements Plan was created and its application form, PD-25A, was devised.

The data requested on the original PD-25A were designed to enable a manufacturer to present a complete picture of his operations in relation to the war program and to essential civilian needs and to state his production-material requirements for these purposes. Each reporting manufacturer stated his dollar shipments of individual products in the three months preceding the filing of the application, and his anticipated dollar shipments for the succeeding calendar quarter for which he wanted preference-rating assistance. In addition, if he used or required any of a long list of materials, he reported for each of them: inventory at the beginning of the preceding quarter, receipts during the quarter, consumption during the quarter, inventory at the end of the quarter, anticipated requirements for the succeeding quarter for which he sought priority assistance, and the dollar value of the materials he required.

The War Production Board was thus put in a position to appraise the significance of a manufacturer's production and to assign preference ratings to specified quantities of materials on a more valid basis than was possible without such information. But at this stage of its operation the Production Requirements Plan had two significant weaknesses.

In the first place, the Plan was entirely voluntary. As a consequence, many manufacturers, particularly those who were made beneficiaries of generous "blanket" or P-orders and those who obtained priority assistance through PD-3A certificates issued by the Army and Navy, were not interested in filing PD-25A. The absence of a substantial segment of American industry in the operation of the plan meant that the War Production Board was unable to obtain a complete over-all picture of American industrial production requirements.

In the fall of 1941 it became more apparent daily that shortages of certain vital raw materials, particularly the metals, and inequities in their distribution were impeding the most efficient use of the production machine. Nothing short of carefully controlled over-all distribution of vital materials seemed adequate to secure maximum output of essential military and civilian goods. Rapidly mounting demands for scarce materials had to be met from a much smaller supply. Without universal reporting by producers, however, it was impossible to determine over-all requirements for quantities of raw materials the supply of which was limited.

But even if PD-25A had been filled out and returned by all manufacturers the necessary over-all picture could not have been obtained in time for immediate policy decisions, because the information on the form was not readily tabulable. Each manufacturer using the Plan was asked to provide data on a long list of materials which he used or required. Since the names of these materials were not preprinted on the

form, the producer himself had to write them in and could report them in any order he chose. Such procedure presented very difficult mass-tabulation problems.

The First PD-275 Forms

To remedy these two shortcomings, Form PD-275, Report on Metal Consumption and Requirements, was introduced experimentally on February 1, 1942. PD-275 was similar to PD-25A except in two important respects. First, it was sent on a mandatory basis to 11,000 manufacturing establishments whose operations, it was thought, would require approximately 90 per cent of the metals used in manufacturing. Second, a list of metals was devised and preprinted on the Form. The first change assured coverage; the second permitted speed in tabulation.

The results were heartening to the sponsors of the Form. The summary tabulations provided the first accurate over-all picture of metal consumption and requirements by manufacturers. The summary statistics revealed the need for drastic curtailment of nonessential manufacturing if vital war and civilian production were to expand at the necessary rate. The report threw into sharp relief the need for a tighter and more efficient control over the flow of metals.

The Second PD-275 Form

To make the metal survey more complete, it was decided to authorize a second PD-275 and to extend its coverage to all metal users in the American industrial system. (In the meantime, of course, Form PD-25A was still being returned by manufacturers on a voluntary basis.) On April 18, 1942, more than 20,000 sets of the second PD-275 report were mailed to the larger manufacturers, shipyards, arsenals, railroads, mines, etc. The coverage obtained was higher than before. Once again the WPB was given an accurate over-all picture of metal consumption and needs. And once again the results pointed to the necessity for tighter metal control.

It must not be inferred that the War Production Board did not have strict control over certain types of metal in use. On the contrary, during this period, the War Production Board Material Branches were devising and putting into use systems for distributing metals to certain preferred users which were, and are now, exercising tight control. The systems do not, however, furnish a means whereby the over-all situation in metal demand and supply can be ascertained, nor are they uniform.

Priorities Regulation No. 11

The instrument to provide the necessary uniform and over-all control of the flow of metals was at hand: Form PD-25A under the Production Requirements Plan, modified in view of the experience with the two PD-275's. All that was required was the termination of the use of blanket P-orders and the consequent inclusion of the bulk of the metal-consuming section of American industry under the Production Requirements Plan. This was ac-

complished on June 10, 1942, by the issuance of Priorities Regulation No. 11.

Under this Regulation, any company or division thereof whose past or anticipated quarterly use or requirements of critical metals exceeds $5,000 is required to apply for rating assistance under the Production Requirements Plan. Exceptions granted include the United States or other government agencies (not including shipyards, arsenals, factories, etc., which are not subject to the Regulation), transportation companies, public utilities, etc. In practice, however, data are gathered by other means for these exempt groups so that the picture of over-all metal consumption is reasonably complete.

Fourth Quarter 1942 PD-25A

Priorities Regulation No. 11 was issued so late in the second quarter that the operation of the Production Requirements Plan in the third quarter was largely experimental. For the fourth quarter of 1942, however, the plan was on a sound operating basis.

In organizing the Plan for the fourth quarter of 1942, Form PD-275 was eliminated and its essential features were incorporated into the old PD-25A Form. Three fundamental characteristics of PD-275 were welded into PD-25A. First, the preprinted metals list, which permitted quick tabulation of reported data, was placed in PD-25A. Second, it was made mandatory that all users of substantial quantities of metals, with certain exceptions noted above, file the PD-25A. Third, reporting firms were required to file the completed form at least 45 days (preferably longer) before the beginning of the quarter to which the statement of requirements applied. In the physical make-up of the Form, however, PD-275 and the old PD-25A differed essentially only in the matter of a preprinted metals list. Other differences were relatively insignificant.

First Quarter 1943 PD-25A

Before outlining the operation of the Production Requirements Plan, the basic features of the Form, which is the foundation of the Plan, should be explained. Section A of the PD-25A Form for the first quarter of 1943 consists of a pamphlet, detached from the Form, entitled "Production Requirements Plan." This booklet contains the instructions for filling out the Form. It explains in detail what should be reported and how. In addition, it contains the list of product groups which should guide the manufacturer in reporting metal consumption and requirements for all the products he makes. Data reported on the application are tabulated under these product classifications.

Section B of the Form is designed to show the manufacturer's shipments in the July-September, 1942, quarter, his estimated shipments for the January-March, 1943, quarter, and the volume of rated orders on hand which he will ship in the first quarter of 1943. For each set of figures the preference-rating pattern is required. Section C requests an analysis of shipments broken down according to five types of pur-

chasers. These are: U. S. Army (except aircraft); U. S. Navy, including U. S. Maritime Commission (except aircraft); Export (including Lend-Lease and other foreign purchasers); Domestic Purchasers; and Aircraft. Section D requests the manufacturer to show the dollar value of his unfilled rated orders. These sections are designed to show what the manufacturer is making; the dollar value of his past and anticipated production; what his rating pattern was, is, and is expected to be; and the ultimate users of his finished product.

Section E contains basic data regarding his consumption and requirements of various metal shapes and forms. This section of the form is approximately the same as PD-275.

In Section F, the applicant is directed to report on other materials (the names of 16 are preprinted) used in the manufacture of the products included in Section B for which a preference rating is requested. Column headings in Section F, except for the statement of fourth-quarter data, parallel those in Section E.

In Section G the applicant is asked to report for each metal shape and form listed in Section E, for each product he manufactures (the breakdown of which should correspond to the product groups listed in the set of instructions), the quantity of such metal used for this product in the third quarter of 1942 and the quantity required during the first quarter of 1943.

In Section H, the applicant is directed to report only those materials for which orders for delivery must be placed more than three months in advance. This section has been included in order to permit a manufacturer to place rated orders for delivery more than three months in the future; it also allows him to place rated orders for items requiring extended delivery dates over three months.

"Cutting the Pie"

When PD-25A applications are received by the WPB, a copy is sent to the Bureau of the Census for tabulation purposes. The Census Bureau occupies a vital place in the operation of the Production Requirements Plan. Acting as the tabulating agency for the WPB, it performs the important function of digesting and summarizing the great mass of information reported on thousands of PD-25A applications. Its summary tabulations furnish the fundamental factual basis for distributing the available scarce metals into those channels considered most important for the maximum production of war goods.

While the Bureau of the Census is making its tabulations, the Requirements Committee of the WPB gathers together all information which is available to it and which will have a bearing upon its policies regarding the distribution of critical metals. It collects information concerning the available supply of critical metal shapes and forms which will match reported requirements on the PD-25A; it reviews the programs for vital military products and determines their requirements for metal; it surveys L- and M-orders and appraises their im-

pact on production in certain industrial divisions; and it receives from the WPB Branches recommendations regarding the metal requirements of certain industries falling within the Branch purview. In short, every shred of information bearing upon the problem of metal distribution which is available and can be applied to the problem at hand is gathered and studied. This information is added to the summary tabulations furnished by the Bureau of Census.

The first step in using the data at hand is to match the requirements of American industry for various types of metal shapes and forms with the supply of metal available. In this way the Requirements Committee is able to determine how much stated metal requirements must be pared, on an over-all basis, to bring the demand and supply for specified metals within balance. When this has been done, cuts are made among the various industry groups on the basis of all the information which is available. In the aggregate these reductions must equal the difference between the demand and the supply of the critical metals. In effect, the Requirements Committee "cuts pies" for each critical metal, assigning a piece of the pie to each industry. When this is accomplished the Committee issues "Directives" or "Determinations" which allocate lump quantities of metals to specified industries.

When the Requirements Committee determinations are established, the WPB Branches "process" the individual PD-25A Forms according to the Determinations. In brief, the WPB Branches decide, upon the basis of the Determinations, information reported on the application, and other data at hand, how much of each critical metal the applicant may use in the quarter under question and how much he may purchase for his operations.

As a final step in processing the Form, the WPB Branches specify preference ratings applying to the materials authorized in the application. These the manufacturer may use, subject to all restrictions of Priorities Regulation No. 11 and other provisions, to acquire the materials allowed on his application.

Appealing the Authorizations

If a manufacturer is given a new contract which requires more metal than he requested on his PD-25A, or if for any other reason he feels that his authorizations are less than they should be, he may appeal to the WPB on Form PD-25F. This is an interim assistance Form upon which additional authorizations may be made. Authorizations to purchase metal granted on PD-25F do not necessarily mean that demand and supply will be thrown out of balance by these additional allowances. In cutting the pies the Requirements Committee sets aside reserves of metals to take care of emergency needs reported on PD-25F's.

Accounting for Metal Authorizations

An elaborate system of records has been developed to account for the mortgages placed upon American metal supplies by the authorizations on PD-25A and other Forms. By far the largest proportion of

total encumbrances on the metals supply are made on the PD-25A's and the PD-25F's. The tabulation of authorizations, which is essential in any well-organized system of metals allocations, is the final step in the operation of the Production Requirements Plan.

Summary

In the face of a serious raw-materials deficiency of the present magnitude, neither a preference-rating system nor a system of piecemeal allocation of particular materials can direct the flow of scarce materials effectively. Some over-all instrument of control is necessary. The Production Requirements Plan provides the framework upon which satisfactory materials control can be built. At its present stage, the Plan centers around the control of the flow of critical metals and the products produced from metals. Other materials than metals, however, are controlled through the Plan.

The Plan permits the War Production Board to obtain an over-all picture of the total requirements of American industry for critical metals. Knowledge of the required quantity of each metal in relation to the known supply furnishes some basis for determining the proper distribution of scarce metals. Thus quantitative control over the flow of raw materials is provided. Operating within the boundaries of quantitative control, the preference-rating system and the military-program scheduling provide qualitative and timing controls.

Very simply, what is accomplished is this: The War Production Board knows the number of available units of materials. Since the Production Requirements Plan supplies a statement of the number of applicants seeking tickets to purchase units, together with the number of units they demand, the War Production Board is able to limit the tickets to the units available. If the quantity of materials to which ticket holders are entitled just equals the volume of materials available for distribution, the preference-rating system can operate effectively in determining the sequence of material deliveries. All ticket holders will get deliveries, but preferred customers will be served first. The Production Requirements Plan provides qualitative control through preference ratings and quantitative control through limiting and directing the flow of materials to industry groups.

Why Not Start Your Own Business?

P. D. Converse
Department of Business Organization and Operation
University of Illinois

There seems to be a rather widespread opinion that it is harder to start a business now than it was a generation ago; that competition with large companies, such as chain stores, makes it difficult for newcomers to gain a foothold; that our frontier is gone; that our economy is mature and controlled by a few big corporations; that the rate of failure is higher; in short, that the new small business starts "behind the eight ball."

This opinion, although widely held, is not substantiated by the information available. A report by the Temporary National Economic Committee summarizes the data collected by the Federal Trade Commission on the relative efficiency of large, medium-sized, and small companies. The conclusion is definite that on the whole the medium-sized and small companies hold the advantage. In 233 tests, big businesses made the best showing in only 11 per cent of the cases.

The number of small business concerns continues to increase. The number of retail stores increased by 15 per cent from 1929 to 1939; the number of wholesale merchants increased by 28 per cent in that decade; the number of service establishments increased by 46 per cent in the six years from 1933 to 1939; and the number of places of amusement increased 22 per cent in the four years from 1935 to 1939.

There is no evidence to indicate that the rate of failure among business concerns has increased during recent years. A number of studies of business mortality have been made which go back fifty to sixty years; one study covers a period of almost one hundred years. These studies indicate that there has been relatively little change in the rate of failure or the average length of business life during these periods.

It is not difficult to understand why some new businesses fail. Some of the owners were out of work and started their own businesses simply because they could not obtain jobs and were unwilling to go on relief rolls. Their independent spirit is highly commendable, but those whose ability is limited and who lack experience cannot be expected to found large businesses.

On the other hand, persons who start their own businesses because they want larger opportunities than they have in working for others are more likely to succeed. Some feel that their compensation as employees is not commensurate with what they earn for their employers and are not satisfied to help pay the heavy overhead expenses of a big company. Some want the greater security which comes from owning

their own businesses and knowing that they cannot be discharged overnight. Some want to be their own bosses. Some want the satisfaction of being known in their communities as the owners of businesses. A man who managed a chain store for some years resigned and started a small store of his own. Probably he does not make much more money than he did when he worked for the chain, but he says that he is much happier with his own business. He is not under constant pressure from an outside organization to increase sales and profits.

There is no reason to assume that there is not as much opportunity for success today as there was when some of our large manufacturing and distributing corporations were started. It is likely that a large number of businesses which will prove to be successful will be launched in the next decade.

In that consumers have money to spend for services and gadgets as never before, the present period is an unusually good time in which to start a business. The income of the American people has been increasing for many years. It has now risen to a point where they have extra money to spend for services, education, travel, electrical appliances, automobiles, adornments, medical and dental care, stocks, bonds, sports, amusements, and gadgets of all kinds.

At this writing, taxes and shortages of labor and materials have temporarily reduced the number of business opportunities. But when the war is over, we will have the capacity to produce goods as never before. New products will be developed; new industries will arise; new businesses will be established. Men with vision, initiative, and ingenuity will take advantage of the new opportunities presented.

In the past thirty years there has been a tremendous increase in the number of products and services on the market. The emergence of new products has created new opportunities. Between 1933 and 1939, for example, 41,000 persons started the operation of beauty parlors. These establishments had to have equipment and trained employees. A man who, in the midst of the depression, was rapidly expanding his business of selling beauty-parlor equipment and training beauty-parlor operators, when asked how he could advertise his equipment said there were three trade papers covering the field. Present directories list six papers in this field, indicating that three more have come into existence.

A few of the relatively new industries may be mentioned briefly. Twenty years ago "vitamin" was a laboratory word, but today the vitamin industry is said to be a $100,000,000 business. The most recent development in this field is the production of hormones to aid plant growth. In 1921, the radio was so new that a group of professional men thought the sound was produced by a record on the machine. Radio has furnished business not only to those who established broadcasting stations or who manufacture equipment, but also to retailers and repair shops. Broadcasting is a $200,000,000 industry, repair shops do $20,000,000 worth of business a year,

and the sale of the new FM sets will give new impetus to the radio industry.

In the winter of 1917-18 experiments were made in hauling goods from the Middle West to the Atlantic Seaboard by motor truck. The tests proved conclusively that long-distance trucking was impractical. Yet within the next five years individuals with secondhand trucks who were too ignorant to know that they were attempting the impossible succeeded in establishing a sizable inter-city trucking business. The largest present-day operator started at that time with one secondhand Model T truck. Today motor trucking is said to be a billion dollar industry.

Commercial hatching has taken much of the drudgery out of the hen's life by relieving her of the necessity of sitting for three long weeks every time a brood of chicks is to be hatched. Each year 780,000,000 baby chicks are ushered into the world in hatcheries. The operation of these hatcheries has given thousands of men a chance to get into business for themselves. Another young industry in which several men have found profitable opportunities is the breeding and sale of hybrid seed corn.

In the past few decades, the sale of electrical appliances, such as refrigerators, vacuum cleaners, washing machines, heaters, razors, toasters, ranges, fans, ventilating equipment, lamps, ultraviolet lights, and coffee percolators has provided favorable opportunities for many manufacturers and dealers. In rural areas, electrification has been interrupted by the war, but will probably be resumed soon after peace has come. Rural electrification furnishes the opportunity for the production and sale of many products, including both appliances used in the home and machines used on the farm. Milking machines, hot water heaters, sterilizers, feed mills, and separators are a few examples. The rural family which is installing electricity at first, perhaps, may use current only in light fixtures, a radio, a washer, and one or two machines for the barn. In addition, a hot plate, a range, a refrigerator, a cleaner, and a fan may be purchased. The installation of an electric pump will provide running water in the home; the family will then be in the market for modern kitchen and bathroom equipment. The increased use of electrical appliances and plumbing on the farm will result in increased demand for repair services in the country towns.

The drug and cosmetic industry has expanded greatly in recent years. New drugs and new serums have been developed and sold in large quantities. Developments continue to come in the use of bacterial products. For example, soil inoculators—cultures—are now widely marketed for aiding in the raising of legumes. This is only a small industry, but it has furnished business opportunities to several men.

In 1923, orange juice was such a novelty that only the most up-to-date eating places served it in small glasses, set in cracked ice. Today orange juice is a staple in the American diet and many other kinds of canned juices—grapefruit, kraut,

pineapple, prune, orange, papaya, cherry—are on the market; a new one seems to appear every few months. The fashion of eating fresh fruits and vegetables was no sooner popularized than the doctors prescribed strained vegetables for babies. The commercial production of strained foods for babies relieved mothers of what had been a tedious chore. Even the family dogs and cats no longer have to depend on table scraps or raids on the neighbors' garbage pails. The manufacture of special prepared canned foods for these pets has grown into a sizable industry.

As incomes increase, people spend more money for services. The Census still reports blacksmith shops, grist mills, harness shops, locksmiths, and livery stables, but some of the following enterprises are relatively new: parking garages, radio repair shops, automobile laundries, tree surgeons, neon sign repair shops, window cleaning services, refrigerator repair shops, and disinfecting and exterminating services.

Plastics—products that are molded into shape by pressure—are made from a variety of raw materials, such as coal, wood, cornstalks, petroleum, cotton, grains, etc. Products made from these plastics are worth hundreds of millions of dollars, and the industry seems to be still in its infancy. Many of the basic plastics will be produced by large companies, but smaller concerns will no doubt fashion and market hundreds of finished products made from them. Everything from toilet articles, belts, ties, and suspenders to office equipment, automobile bodies and parts, and building materials may be made from plastics in the future.

Another mammoth new industry is the manufacture of synthetic rubber. It is doubtful whether we shall ever again import great quantities of natural rubber from the Orient. For some uses synthetic rubber is actually superior to natural rubber.

The new textile fibres are in great demand. The manufacture of rayon has become a major industry which, in spite of ever-increasing production, has scarcely been able to supply the demand. Nylon is a new fibre which has been popularized in hosiery but it is capable of many other uses. For example, as an inorganic product it is not subject to decay. If used in fishermen's nets, it will prevent the frequent drying which present nets require. It could also be used to advantage in fishing lines. Vinyon, another new inorganic fibre, is adapted for use in industrial plants. It can be woven into cloth for straining acids, which formerly had to be slowly filtered through sand beds. With these artificial fibres coming into general use and proving satisfactory, it may be that little natural silk will be imported when it again becomes available.

When moving pictures were being perfected, better film was needed. The development of film coated with a very fine emulsion made possible not only our modern moving pictures but also candid cameras and other new developments in photography. For example, one photographic concern avoids the expense

f retouching negatives by taking a umber of small pictures, some of hich will be satisfactory without etouching and which can be enarged to the desired sizes. Colored ictures supply the basis of a sizable ew industry for both amateur and rofessional photographers.

Farm products and wastes from arm products provide the raw maerials for new industries. Perhaps he one most talked about in recent ears is the soybean. At present it s used largely for edible oil (fat) or human consumption in the form of cooking fats, margarines, etc., nd for animal feed in the form of neal. Hundreds of products can, owever, be made from the soybean. One company using soybeans and corn as raw materials now has 60 commercial products but expects to have 260 ready for the market when the war ends. Paper, building board, insulating materials, motor fuel, and other products may be made from cornstalks, straw, and corncobs. A sizable business has been built by using bagasse, the refuse from sugar cane mills, in making a building board. Flax straw s used in upholstering furniture. Industrial alcohol can be extracted from many farm crops, such as potatoes, molasses, and grains.

We have become accustomed to having our homes well heated in winter. To aid in this heating, many new devices have been developed in recent years. The increasing use of oil burners has supplied business for manufacturers and dealers. The mechanical stoker for coal furnaces s another product for which there s an unsaturated market. Automatic heat-control devices call for thermostats and electrical fixtures. Insulating materials, which reduce fuel costs, are used in the construction of new buildings, and contractors blow such materials into the walls of old buildings. Storm windows, and window and door stripping, long used in northern latitudes, are now commonly used in more temperate climates.

The reverse procedure of cooling buildings in summer is a practice still in its infancy. Developments in the air conditioning of railroad cars, factories, theaters, restaurants, and retail stores are well known, but the application of air conditioning to private homes is just beginning. The manufacture, sale, installation, and services of such equipment will furnish opportunities for a great many men in the future. Air cooling adds impetus to the sale of insulating materials. A new type of screen wire with flat horizontal strips set at an angle to reflect most of the sun's rays helps to prevent the sun's heat from entering through the windows. After some years of development and testing, such screens are now on the market.

New homes are now equipped with many materials and appliances little used or even unknown a generation ago. Besides insulating materials and air-cooling devices, shower baths, built-in cabinets, thermostatically controlled heat and hot water supply, wiring for electrical equipment, built-in electric heaters in bathrooms, ventilating fans, attic fans to expel the hot air and draw cool night air through the building, awnings, telephone booths,

tile drainboards in kitchens, garbage incinerators, and recreation rooms in basements are examples.

The manufacture of quick-frozen foods is a relatively new industry which is still in its expanding stage. It offers opportunities in both the production of such foods and their marketing. During the past five years the use of individual food locker plants, which were first started in the West, has spread to the eastern half of the country. A farmer may kill his own meat or poultry and have it frozen for later consumption; he can also freeze fruits or vegetables for winter use. City people can buy meat in large quantities at wholesale and have it frozen and stored for use as needed, thus substantially reducing the cost per pound. Hundreds of locker plants have been built both by private and by cooperative associations. A new development is the sale of low-temperature refrigerators to domestic consumers, who can then buy frozen foods in large amounts and keep reserve supplies in their homes. Thus the home becomes a market for two refrigerators. This idea is new, and no one can tell how popular it will become.

Progress is also being made in dehydrating foods for transport to our overseas armed forces and our allies. No doubt some of these dehydrated foods will find a permanent market in domestic trade after the War. Sweet cream is shipped to eastern markets from mid-western and southern states, and the remaining skim milk is powdered. This dried skim milk is already an important article of commerce. It is extensively used by bakeries and other food processors and some is used as animal food. There is a possibility of making reconstituted milk from butter, dried skim milk, and water on a much greater scale than at present. Some visualize the day when the consumer will reconstitute milk as needed in the home and thus obviate the expensive daily visits of the milkman. Technical improvements may make possible the economical production of dried whole milk which will keep for a considerable period. If this proves practical, the making of reconstituted milk in the home will be simplified. For many years, this product has been used in feeding babies. Possibly it may furnish a more economical method than the distribution of whole milk under present conditions.

Shorter working hours have given people more leisure, and when peace comes leisure-time activities will offer larger markets for many products. First, one may note the increased number of periodicals and books on sale in drug stores and on newsstands. Attendance at movie theaters and at athletic events has increased greatly. The lighting of playing fields enables many persons who are employed during the day to attend sporting events at night. Participation in athletic events has meant increased sales of skis, golf clubs, skates, bowling alley equipment, basket balls, soft balls, uniforms, bicycles, bleacher seats, fishing tackle, and boats.

Old age pensions have given older people more leisure. Summer cottages in the North and winter homes

the South have increased in number. These must not only be built but also be furnished. Because of the increase both in automobile ownership and in leisure time, travel has increased tremendously in the last twenty years. The business of filling stations, tire stores, repair garages, trailer manufacturers, and others engaged in selling and servicing cars has consequently expanded. New business enterprises have arisen to serve the tourists. Among these are cabin camps, tourist apartments, trailer camps, and tourist homes. Many families have found an added and appreciated source of income in keeping overnight guests. Roadside stores and stands have come into existence to sell goods to the tourists; restaurants, hot-dog counters, fruit stands, antique shops are examples. Pottery, bedspreads, furs, and novelties of all kinds are sold along the highways. Retail stores which sell furniture and clothing have been established outside towns—"merchandising in the cornfields."

Tourists must have places to visit. "Scenic spots" of all kinds have been provided, often by the government, sometimes by private capital. Visitors to our national and state parks have increased manyfold. Monuments to historic events or personages and battlefields, as well as historic buildings and restorations of old forts, are visited by thousands annually. Caves, Indian burial grounds, waterfalls, plantations, botanical gardens, and old mansions are illustrative of attractions advertised to the tourists. Guide services and boat rides are popular. At times it has seemed that the "attractions" were not increasing in number as rapidly as the tourists.

The development and marketing for civilian use of many new products is "out for the duration." Postwar developments are to be expected in many fields. When the war is over there will be five or ten million men to outfit with civilian clothes. There will be a demand for tens of millions of tires as fast as the factories can turn them out. There will be a demand for millions of new cars and trucks to replace those now being worn out. Millions of soldiers, recently married, who want to set up homes will be in the market for furniture and home furnishings. Many new buildings will be needed. Besides these obvious domestic demands, our materials and labor will be required in rebuilding destroyed areas and buildings in other countries.

Our metal-working factories have been greatly expanded to meet war demands. Many of these plants will turn to producing goods for civilian needs. Great improvements have been made in gasoline and Diesel engines. Radical improvements in automobiles and airplanes are predicted. We may expect a greatly increased air-transportation business and the building of new and improved highways for automobile use.

Many new products will doubtless be developed and placed on the market. Air conditioning, manufacture of FM radio sets, and television are a few industries that seem to be ready for popular exploitation. There may be hundreds of others.

In the development of new products and new services, the young man with limited capital can find many opportunities. As the industry is not yet established, he has no well-intrenched competition. This has been true in the past and there is no reason to think it will not be true in the future. Most of our big businesses, for example, Ford, Heinz, Sears, Ward, and Penney, were started by one or two men with a product or an idea and very little capital. Some of the most successful retail concerns in operation at present were started by men who saved or borrowed small amounts of money which they invested in stocks and equipment.

Another branch of the marketing field is market research, which is barely thirty years old, yet produces an annual income of several million dollars and is expanding rapidly. Some men who have started specialized research services have succeeded notably.

All this is not to say that every young man should try to establish his own business; there is not room enough for so many enterprises. Many men have neither the ability nor the mental attitude necessary to make a business successful. Some do not care to take risks and shoulder responsibilities. Some prefer the more regular hours and steady incomes of employees. As one student put it, he would rather have a certain income, regular hours, and enough leisure for bridge and golf than the chance of making more money by establishing a business of his own. Many college graduates prefer to work for large companies and take their chance of promotion to remunerative positions. Some chain stores, for example, attract many young men who hope and expect to attain positions as store managers. Some of these companies have regular lines of promotion from stockroom to store manager, from smaller to larger stores, and, perhaps, finally to executive positions in the head office. On the other hand, many young men take positions with chain stores with no idea of remaining in such employment permanently but with the expectation of learning merchandising methods and then starting stores of their own.

But, as has already been noted, there are many advantages and rewards in having a business of one's own. It offers a certain security. When a certain man was a branch manager for a large company he lived in constant anxiety about being dismissed. "Now with my own business, when I lock up at night, I know I have a place to come to work tomorrow." There is a satisfaction in building for one's self—an outlet for the constructive instinct. There is a certain psychic income from owning one's business and being known in the community as the proprietor of a business. A student once said that he would rather work 12 hours a day for himself than 7 hours a day for another.